



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,702	08/04/2000	HIDEYOSHI HORIMAI	106357	8307
25944	7590	10/22/2003		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320				
EXAMINER LAVARIAS, ARNEL C				
ART UNIT			PAPER NUMBER	
2872				

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/601,702

Applicant(s)

HORIMAI, HIDEYOSHI

Examiner

Arnel C. Lavarias

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/10/03, 8/28/03.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,6-8,16,17,51-56,58-60 and 79-85 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,6-8,16,17,51-56,58-60 and 79-85 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 21.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendments to the title of the invention in Paper No. 24, dated 8/28/03, are acknowledged and accepted.
2. The amendments to Claims 1-2, 6-8, 16-17, 51-56, 58-60, 79-85 in Paper No. 24, dated 8/28/03, are acknowledged and accepted.
3. The cancellation of Claims 57, 61-78, 86-95 in Paper No. 24, dated 8/28/03, is acknowledged and accepted.

Response to Arguments

4. The Applicant argues that, with respect to newly amended Claims 1-2, 6-8, 16-17, 51-60, 79-85, Horimai fails to disclose or reasonably suggest means for spatially modulating the phase of reproduction of reference light in the same manner in which the reference light was modulated when the information was recorded. The Examiner agrees, and respectfully withdraws the obviousness-type double patenting rejection to Claims 1-2, 6-8, 16-17, 51-60, 79-85 in Sections 13-16 of Paper No. 20, dated 2/28/03.
5. The Applicant argues that, with respect to newly amended Claims 1, 6, 51, 53-55, Burchardt fails to teach or reasonably suggest an optical information recording and reproducing apparatus in which reproducing reference light is modulated in the same manner as recording reference light when the information is reproduced. The Examiner

agrees, and respectfully withdraws the rejections to Claims 1-2, 6-8, 16-17, 51-60, 79-85 in Sections 17-22 in Paper No. 20, dated 2/28/03.

6. Claims 1-2, 6-8, 16-17, 51-56, 58-60, 79-85 are rejected as follows.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 6, 51, 53-55 are rejected under 35 U.S.C. 102(b) as being anticipated by Curtis et al. (U.S. Patent No. 5719691).

Curtis et al. discloses an optical information recording and reproducing apparatus (See Figure 1) for recording information in and reproducing information from an optical recording medium (See 13 in Figure 1) having an information recording layer in which information is recorded utilizing holography (See Figure 1) in the form of an interference pattern as a result of interference between information light (See 26 in Figure 1) carrying the information and reference light (See 11 in Figure 1) for recording having a spatially modulated phase (See col. 4, lines 20-37), the apparatus comprising information light generation means (See 26, 15 in Figure 1); recording reference light generation means including phase modulation means (See 11, 25 in Figure 1; col. 4, lines 20-37); a recording optical system for illuminating the information recording layer on the same side thereof with the information light generated by the light generation means and the

reference light (See 16, 17, 18, 24, 12 in Figure 1); reproduction reference light generation means including phase modulation means for spatially modulating the phase of light in the same manner in which the reference light was modulated when the information was recorded (See 11, 25 in Figure 1; col. 4, lines 20-37; Abstract; col. 1, line 60-67; col. 10, lines 61-67); a reproducing optical system for illuminating the information recording layer with the reference light for reproduction (See 16, 17, 18, 24, 12 in Figure 1); and detection means for detecting the reproduction light collected by the reproducing optical system (See 22 in Figure 1).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 7, 16, 56, 59-60, 79-80, 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis et al. in view of Burchardt (U.S. Patent No. 3573362), of record, and Liu et al. (U.S. Patent No. 6272095), of record.

Curtis et al. discloses the invention as set forth above. Curtis et al. additionally discloses the optical information recording and reproducing apparatus performing spatial multiplexing (See col. 1, lines 15-20; col. 5, lines 23-34; col. 8, lines 1-17). Curtis et al. lacks information light generation means generating plural information and wavelength selection means for selecting a wavelength of light illuminating the information recording

layer from among a plurality of wavelengths. However, Burchardt discloses an optical information reproduction apparatus for recording and reproducing information utilizing holography (See Figures 3A, 4, 5, 9; col. 9, lines 17-28) from an optical information recording medium having an information recording layer (See 423 in Figure 4), and information light generation means generating plural information lights (it is noted that the plural information lights of Burchardt occur temporally as a function of time, i.e. each pulse generated by 31 occurs sequentially in time). Further, Liu et al. teaches an apparatus and method for storing and/or reading data on an optical disk by holographic means (See Figures 1-2, 4-6, 8-10, 13, 18; col. 3, line 7-col. 6, line 27; col. 18, line 42-col. 19, line 51). In particular, Liu et al. teaches the reproduction reference light generation means (See 104, 106 in Figure 4 for example); a reproducing optical system for illuminating the information recording layer with the reference light and for collecting reproduction light generated at the information recording layer (See 110, 120 in Figure 4 for example); and detection means for detecting the reproduction light collected by the reproducing optical system (See 132, 130, 124 in Figure 4 for example). Liu et al. additionally teaches wavelength selection means for selecting a wavelength of light illuminating the information recording layer from among a plurality of wavelengths (See col. 18, line 20-col. 20, line 52) and the apparatus performing wavelength and spatial multiplexing (See for example Figure 3; col. 20, lines 13-30). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the apparatus and method for storing and/or reading data on an optical disk by holographic means include information light generation means generating plural

information and also to include wavelength selection means for selecting a wavelength of light illuminating the information recording layer from among a plurality of wavelengths, as taught by Burchardt and Liu et al. One would have been motivated to do this to take advantage of existing, mature, and low-cost drive mechanisms and electronics found in conventional CD-ROM drives, which are easily modified to operate the above optical reproduction system. One would have been motivated to include wavelength selection means and spatial/wavelength multiplexing to increase the storage density of the recording medium, as well as reducing cross-talk noise.

11. Claims 2, 8, 17, 52, 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis et al. in view of Burchardt and Liu et al. as applied to Claims 1, 6, 7, 16, 51, 54, 56, 59 above, and further in view of van Rosmalen (U.S. Patent No. 4638471), of record, Reid et al. (U.S. Patent No. 4213193), of record, or Hays et al. (U.S. Patent No. 5777760), of record.

Curtis et al. in view of Burchardt and Liu et al. discloses the invention as set forth above in Claims 1, 6-7, and 16 above, except for the optical information recording medium having a positioning region, and the apparatus further comprising position control means. However, van Rosmalen, Reid et al., and Hays et al. all discloses various optical recording and reproducing apparatus that utilize a recording medium having a positioning region, and the apparatus further comprising a position control means. van Rosmalen teaches a conventional recording and reproducing apparatus (See Figure 1) wherein the record carrier includes locations having signal information, as well as positional information of the scanning spot relative to the information track (See col. 5,

lines 1-20). Reid et al. similarly discloses a conventional recording and reproducing apparatus, particularly suited for holography (See Figure 1) wherein particular locations on the storage medium include block bits for providing information on identification and location of any particular data page in one of the plural hologram data tracks (See Figure 8; col. 6, lines 14-49). This data is used in conjunction with a controller means (See 46 in Figure 1; col. 5, line 38-col. 6, line 13). Hays et al. teaches a position feedback system for a volume holographic storage medium (See Figure 10) wherein a plurality of servo blocks are recorded on the storage medium to provide position information to position control means, such as a voice coil motor (See Figure 2; abstract). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the optical information recording medium having a positioning region, and the apparatus further comprising position control means, as taught by van Rosmalen, Reid et al., and Hays et al., for the purpose of improving storage capacity and reducing cross-talk noise.

12. Claims 81, 83-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis et al. in view of Burchardt and Liu et al. as applied to Claim 79 above, and further in view of Reid et al.

Curtis et al. in view of Burchardt and Liu et al. discloses the invention as set forth above, except for a parity generation unit and the optical recording unit recording a same interference pattern on plural locations on the optical information recording medium. However, Reid et al. teaches a conventional recording and reproducing apparatus, particularly suited for holography (See Figure 1). Reid et al. additionally discloses

particular locations on the storage medium including block and parity bits for providing information on identification, location, and data parity of any particular data page in one of the plural hologram data tracks (See Figure 8; col. 6, lines 14-49). Such parity and block bits are generated prior to or during holographic data recording (See col. 6, lines 21-30) by a generation unit (although not specifically disclosed, such a unit is required to produce such parity and block bit data). It is noted in particular that such a holographic recording and reproducing apparatus provides data redundancy (See col. 1, lines 13-40) wherein such data, whether parity data, block data, or actual holographic data, is recorded multiple times, either in the same location or in multiple locations on the storage medium. Therefore, it would have been obvious to one having ordinary skill in the art to have the optical recording unit record the same interference pattern on plural locations on the optical information recording medium, as taught by Reid et al., in the optical information recording apparatus of Curtis et al. in view of Burchardt and Liu et al. for the purpose of providing data redundancy and decreasing data retrieval access times.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

Art Unit: 2872

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

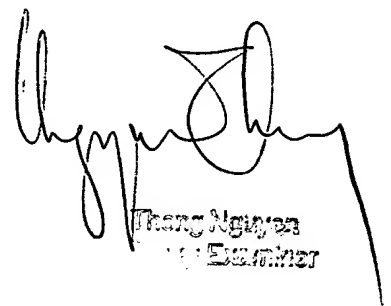
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Arnel C. Lavarias
10/14/03



Theng Nguyen
Examiner